The Applicant submits that Figure 1 and Figure 2 are not entirely prior art, and no such requirement is necessary. Aspects of these figures contain design choices which are not clearly in the prior art. For example, while of course laptop computers are known in the art, the exact dimensions of the laptop in figure 1, including the size, shape and connectability of the components, etc., are not anticipated by any laptop in the prior art. The same arguments apply to Figure 2 as well. If the Examiner wishes to maintain the objections, please provide a figure anticipated these figures.

Page 2 of the Office Action further states that "a display unit displaying that the synchronous switches are simultaneously turned on as recited by claims 2, 23 and 30 must be shown or the feature canceled from the claim." The Applicant submits that the display 58 of Figure 2 and the corresponding description starting on page 20, line 14, adequately describes this feature.

Therefore, withdrawal of the rejections is respectfully requested.

III. REJECTION OF CLAIMS 1--40 UNDER 35 U.S.C. 103

Page 3 of the Office Action rejects claims 1, 3-22, 24-29, and 31-40 under 35 U.S.C. § 103(a) as being unpatentable over Nguyen (U.S. Patent No. 6,069,471) in view of Kuriyama et al (U.S. Patent No. 5,933,341).

Claim 1 recites, "a main switch; a synchronous switch, where the main switch and the synchronous switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted; and **a** detection circuit that detects when the main switch and the synchronous switch are simultaneously turned on."

Nguyen discloses the use of a synchronous rectifying type of circuit, but does not disclose how to detect when H-MOS (FET 112) and L-MOS (FET 114) are simultaneously turned on. It is general to manufacture a synchronous rectifying type of circuit in which FETS are not simultaneously turend on because such a simultanoues turning on of FETS should not happen, and Nguyen only describes a synchronous rectifying type of circuit.

Kuriyama is cited for disclosing that "simultaneous switch conduction detection circuits were known expedients in power conversion circuitry where simultaneous switch conduction was a problem. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the regulator circuit of Nguyen by utilizing a simultaneous switch

conduction detection circuit, such as taught by Kuriyama . . ."

Kuriyama relates to detecting whether a short circuit of a self dis-igniting element (for example a bipolar transistor) is functioning properly. This is achieved by implementing two comparators which measure output voltages from two gates and determine if each voltage is higher than a predetermined voltage. If both voltages are high or both voltages are low, then this is considered a normal signal. (See Kuriyama, Figure 3).

Note again that claim 1 recites, "a main switch; a synchronous switch, where the main switch and the synchronous switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted; and **a detection circuit that detects when the main switch and the synchronous switch are simultaneously turned on**." (emphasis added).

Kuriyama detects when both comparators detect a different signal category (i.e. one high, one nonexistant or one low, one nonexistant) See Kuriyama, Figure 3. Kuriyama does not test or realize when both gates are simultaneously turned on. In Kuriyama, Figure 3, there is not an entry in the truth table for both gates being turned on. Note that the voltage category in Kuriyama is not the same as whether the corresponding gate signal is actually turned on or off.

Nguyen reduces the change of voltage referred to as V_{core} caused by load variation, which is a circuit for operating a so-called "SpeedStep" processor. This does not relate to the above-quoted feature of the present invention.

Thus, combining Kuriyama with Nguyen may suggest a system which compares voltages from signals in Nguyen and judges an abnormality if both voltages do not fall in the same category. Nevertheless, this is quite different than detecting when the main switch and the synchronous switch are simultaneously turned on.

It is noted that Kuriyama would not suggest such a configuration, as the invention does not relate to or realize the possibility of both gates being turned on.

Page 3 of the Office Action states, "It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the regulator circuit of Nguyen . . . in order to not only attempt to prevent simultaneous switch conduction but to also detect simultaneous switch conduction in a manner that was old and known in the art at the time of the invention." Based on the above discussion, the features of claim 1 as discussed above are not old and known in the art at the time of the invention. The Kariyama reference operates in a fundamentally different way than the present invention. Therefore, the Applicant respectfully

traverses the above quoted statement that claimed features of claim 1 are old and known in the art.

Further, it would be illogical to combine these references, as Nguyen relates to a DC to DC converter, and Kuriyama relates to a DC to AC converter. These apparatuses are wholly different, and combining one with the other would not be suggested by either reference.

Therefore, in view of the above, it is submitted that claim 1 is not obvious over the applied references.

Claims 8, 15, 22, 29, and 36-40 recite features discussed above, and in view of the above discussion, are also not unpatentable over the applied references.

Therefore, in view of the above, withdrawal of the rejections is respectfully requested.

IV. CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 11/18/07

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

None of the claims are amended. Nevertheless, for the convenience of the Examiner, all of the pending claims are listed below:

1. (AS ONCE AMENDED) A switching regulator, comprising:

a main switch;

a synchronous switch, where the main switch and the synchronous switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted ; and

a detection circuit that detects when the main switch and the synchronous switch are simultaneously turned on.

2. (AS ONCE AMENDED) A switching regulator according to claim 1, wherein the switching regulator further comprises a display unit that displays when the main switch and the synchronous switch are simultaneously turned on.

3. (AS ONCE AMENDED) A switching regulator according to claim 1, wherein the switching regulator further comprises an operation stop circuit that stops a conversion operation of the switching regulator in a case where the main switch and the synchronous switch are simultaneously turned on.

4. (AS ONCE AMENDED) A switching regulator according to claim 1, wherein the detection circuit monitors at least one of the main switch and the synchronous switch.

5. (AS ONCE AMENDED) A switching regulator according to claim 1, wherein the detection circuit monitors a direction of a current conducting through the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

6. (AS ONCE AMENDED) A switching regulator according to claim 1, wherein the detection circuit monitors a magnitude of a current conducting through the main switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

7. (AS ONCE AMENDED) A switching regulator according to claim 1, wherein the detection circuit monitors a driving signal that drives the main switch and the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

8. (AS ONCE AMENDED) A switching regulator, comprising:

a main switch;

a synchronous switch where the main switch and the synchronous switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted; and

a switching control circuit, that controls the main switch and the synchronous switch, comprising

a detection circuit that detects a state that the main switch and the synchronous switch are simultaneously turned on.

9. (AS ONCE AMENDED) A switching regulator according to claim 8, wherein the switching regulator further comprises detection result output that outputs a detection result of the detection circuit.

10. (AS ONCE AMENDED) A switching regulator according to claim 8, wherein the switching regulator further comprises an operation stop circuit that stops a conversion operation of the switching regulator in a case where the main switch and the synchronous switch are simultaneously turned on.

11. (AS ONCE AMENDED) A switching regulator according to claim 8, wherein the detection circuit monitors at least one of the main switch and the synchronous switch.

12. (AS ONCE AMENDED) A switching regulator according to claim 8, wherein the detection circuit monitors a direction of a current conducting through the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

13. (AS ONCE AMENDED) A switching regulator according to claim 8, wherein the detection circuit monitors a magnitude of a current conducting through the main switch to detect

a state that the main switch and the synchronous switch are simultaneously turned on.

14. (AS ONCE AMENDED) A switching regulator according to claim 8, wherein the detection circuit monitors a driving signal that drives the main switch and the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

15. (AS ONCE AMENDED) A monitor circuit for a switching regulator, comprising:

a main switch; and

a synchronous switch, both of which are alternately turned on so that a voltage of a DC electric power is transformed and outputted, the monitor circuit comprising

a detection circuit that detects a state that the main switch and the synchronous rectifying switch are simultaneously turned on.

16. (AS ONCE AMENDED) A monitor circuit according to claim 15, wherein the monitor circuit further comprises a detection result output that outputs a detection result of the detection circuit.

17. (AS ONCE AMENDED) A monitor circuit according to claim 15, wherein the monitor circuit further comprises an operation stop circuit that stops a conversion operation of the switching regulator in a case where the main switch and the synchronous switch are simultaneously turned on.

18. (AS ONCE AMENDED) A monitor circuit according to claim 15, wherein the detection circuit monitors at least one of the main switch and the synchronous switch.

19. (AS ONCE AMENDED) A monitor circuit according to claim 15, wherein the detection circuit monitors a direction of a current conducting through the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

20. (AS ONCE AMENDED) A monitor circuit according to claim 15, wherein the detection circuit monitors a magnitude of a current conducting through the main switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

21. (AS ONCE AMENDED) A monitor circuit according to claim 15, wherein the detection circuit monitors a driving signal that drives the main switch and the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

22. (AS ONCE AMENDED) An electronic equipment, comprising:

a switching regulator;

a main switch;

a synchronous switch, where the main switch and the synchronous switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted; and

a detection circuit that detects when the main switch and the synchronous switch are simultaneously turned on, wherein the electronic equipment is operative with an electronic power from the switching regulator.

23. (AS ONCE AMENDED) An electronic equipment according to claim 22, wherein the electronic equipment further comprises a display unit that displays that the main switch and the synchronous switch are simultaneously turned on.

24. (AS ONCE AMENDED) An electronic equipment according to claim 22, wherein the electronic equipment further comprises an operation stop circuit that stops a conversion operation of the switching regulator in a case where the main switch and the synchronous switch are simultaneously turned on.

25. (AS ONCE AMENDED) An electronic equipment according to claim 22, wherein the detection circuit monitors at least one of the main switch and the synchronous switch.

26. (AS ONCE AMENDED) An electronic equipment according to claim 22, wherein the detection circuit monitors a direction of a current conducting through the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

27. (AS ONCE AMENDED) An electronic equipment according to claim 22, wherein

the detection circuit monitors a magnitude of a current conducting through the main switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

28. (AS ONCE AMENDED) An electronic equipment according to claim 22, wherein the detection circuit monitors a driving signal that drives the main switch and the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

29. (AS ONCE AMENDED) A method of monitoring a switching regulator, comprising:

turning on a main switch;

turning on a synchronous switch, wherein the main switch and the synchronous switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted ; and

detecting a state that the main switch and the synchronous rectifying switch are simultaneously turned on is detected.

30. (AS ONCE AMENDED) A method of monitoring a switching regulator according to claim 29, further comprising displaying in accordance with the detecting, that the main switch and the synchronous switch are simultaneously turned on.

31. (AS ONCE AMENDED) A method of monitoring a switching regulator according to claim 29, wherein a conversion operation of the switching regulator is stopped in accordance with the detecting.

32. (AS ONCE AMENDED) A method of monitoring a switching regulator according to claim 29, wherein the detecting monitors at least one of the main switch and the synchronous switch.

33. (AS ONCE AMENDED) A method of monitoring a switching regulator according to claim 29, wherein the detecting monitors a direction of a current conducting through the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

34. (AS ONCE AMENDED) A method of monitoring a switching regulator according to claim 29, wherein the detecting monitors a magnitude of a current conducting through the main switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

35. (AS ONCE AMENDED) A method of monitoring a switching regulator according to claim 29, wherein the detecting monitors a driving signal driving the main switch and the synchronous switch to detect a state that the main switch and the synchronous switch are simultaneously turned on.

36. (AS ONCE AMENDED) A switching regulator, comprising:

a first switch;

an inductor which is connected in series with the first switch;

a second switch disposed between a connecting point of the first switch with the inductor and a ground point, in which the first switch and the second switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted ; and

a detection circuit that detects a state that the first switch and the second switch are simultaneously turned on.

37. (AS ONCE AMENDED) A switching regulator control circuit, comprising:

a first switch connected in series to an inductor;

a second switch disposed between a connecting point of the first switch with the inductor and a ground point where the first switch and the second switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted ; and

a detection circuit that detects when the first switch and the second switch are simultaneously turned on.

38. (AS ONCE AMENDED) A monitor circuit for a switching regulator control circuit, comprising:

a first switch connected in series to an inductor ;

a second switch disposed between a connecting point of the first switch with the inductor and a ground point where the first switch and the second switch are alternately turned

on so that a voltage of a DC electric power is transformed and outputted ; and

a detection circuit that detects when the first switch and the second switch are simultaneously turned on.

39. (AS ONCE AMENDED) An electronic equipment, comprising:

a switching regulator, comprising

a first switch;

an inductor which is connected in series with the first switch;

a second switch disposed between a connecting point of the first switch with the inductor and a ground point, in which the first switch and the second switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted; and

a detection circuit that detects a state that the first switch and the second switch are simultaneously turned on, wherein the electronic equipment is operative with an electronic power from the DC-DC converter.

40. (AS ONCE AMENDED) A method of monitoring a switching regulator, comprising:

turning on a first switch and an inductor which are connected in series ; and

turning on a second switch disposed between a connecting point of the first switch with the inductor and a ground point, wherein the first switch and the second switch are alternately turned on so that a voltage of a DC electric power is transformed and outputted, and a state that the first switch and the second switch are simultaneously turned on is detected.